

LATEST SMARTPHONE, TABLET AND APP REVIEWS

ANDROID

ADVISOR

ISSUE
13

**Best
Android
phones
2015**



HTC ONE M9 VS SAMSUNG GALAXY S6 & S6 EDGE

VS

**Huawei Watch
Apple Watch**

PLUS:
**HOW TO BACK UP
ANDROID**

Welcome...

Last month we were excited to have just returned from MWC, where we got our first glimpses of the HTC One M9, Samsung Galaxy S6 and S6 Edge. Now we've had the chance to do some further testing, and on page 64 reveal what is the best Android phone of 2015 so far.

So the S6 has lost its microSD card slot. It's not really such a big deal, is it? We show you how to add storage to Android on page 100. We've also got advice on how to back up Android (page 91) and recover from a suspected virus (page 96).

Just about to go on sale as we went to press was the Apple Watch. It has to be one of the most hyped smartwatches ever... until the Huawei Watch came along. So, while everyone's getting excited about the Apple Watch, we check out how this stylish new Android Watch compares on page 85.

Motorola's been lining up the new phones, too - but this time we reckon it's just got it plain wrong. Find out how what was once the best budget phone got beaten by its little brother on page 74.

If you're looking for home entertainment, both Amazon's Fire TV Stick (page 22) and the Google Nexus Player (page 65) made their way to the UK this month. About time, too.

As always, we hope you've enjoyed this issue of Android Advisor. Feel free to send us your feedback via facebook.com/AndroidAdvisorUK or email marie_brewis@idg.co.uk.



Google picks London for first shop-within-a-shop

Google has opened its first shop-within-a-shop in London, yet another retail experiment by the company

Located inside the Currys PC World store on Tottenham Court Road, Google's first shop-within-a-shop features Google's Nexus devices, Chromebooks and other products.

It's not a full-blown retail outlet like Apple's huge and sophisticated stores, but more of a modest test balloon for the search giant. It builds on dedicated areas Google already has in big electronics shops.

Although not very big, the store is prominently located by the entrance, so it's impossible to miss. Shoppers can test and buy Google's Android phones and tablets, as well as Android Wear smartwatches and Chromebook laptops from partners such as LG Electronics, Motorola, HP and Asus.

To attract visitors, Google has also built a doodle wall where digital spray cans are used to create new versions of the company's logo.



Xiaomi celebrates 5th birthday with £65 Redmi 2A

As part of its fifth birthday celebrations Xiaomi has announced a budget 4G phone

As part of its fifth birthday celebrations Xiaomi has announced a budget 4G phone. Here's everything we know about the Redmi 2A.

Xiaomi's Redmi 2A 4G budget phone was announced on 31 March in an event organised to celebrate Mi's fifth birthday. The Xiaomi Redmi 2A will be available in China from 8 April, although like all Xiaomi phones it won't officially be available to buy in the UK. You can get around that by buying from unofficial channels such as Amazon, eBay or sites such as Geekbuying.

Other products announced by Xiaomi on 31 March include a Xiaomi Mi Note Pink Edition, Mi TV 2 55in, Mi Smart Scale and a Mi Power Strip.

The Redmi 2A costs 599 yuan, which directly translates to £65 or \$96. Expect to pay a little more than this if you're going to ship it to the UK.

Despite its tiny price, the budget Xiaomi Redmi 2A has some relatively decent specs. As well as a 4.7in IPS HD (1280x720) display the Redmi 2A has a Leadcore L1860C quad-core Cortex A7 processor, 1GB of RAM, 8GB of storage (plus microSD support up to 32GB), 2- and 8Mp cameras, and a 2200mAh battery. Connectivity includes dual-SIM, Bluetooth 4.0, 802.11b/g/n Wi-Fi, GPS and 4G.





HTC One M8s unveiled as cheaper alternative to M9

The One M8s is now a mid-range alternative to the flagship One M9

Can you spot the difference? This is the new HTC One M8s, a new, cheaper phone for those that can't (or won't) stretch to the flagship HTC One M9. In looks and design, it's impossible for the average person to tell the older One M8 and new One M8s apart.

They have the same full-HD, 440ppi 5in screen, and the same all-metal shell. That's a good thing: this is a premium phone that still looks great, and is the right size, in 2015.

The processor is new: a Snapdragon 615 instead of the 801. The differences are that it's now 64-bit and octa-core instead of 32-bit and quad-core. We'd be surprised if you can tell much of a difference in normal day-to-day use, though.

There's still 2GB of RAM and 16GB of storage, with microSD expansion up to 128GB.

Battery capacity is very slightly up from 2600- to 2840mAh, but whether or not it will last longer will have to wait until we've run our benchmarks.

A bigger change is the new 13Mp main camera, which replaces the 4Mp ultrapixel camera in the old phone. There's still the 'duo' arrangement so you'll benefit from the clever features such as being able to change the focus of a photo after taking it. There's no 4K capture, unfortunately, and the 5Mp front camera is the same as before.

Out of the box the One M8s comes with Android Lollipop, and HTC Sense 6.



The One M8s will cost £379 SIM free in the UK, a considerable saving on what the One M8 cost last year, and still costs where you can find it right now.

Initially available in Gunmetal Grey, the phone will be available almost immediately from the usual retailers as well as HTC's site.



HTC One M9+

The One we were waiting for

A Quad-HD HTC One M9+ with a fingerprint scanner has been announced in China

An HTC One M9+ has been announced in China, and it's the HTC One M9 we were hoping for at MWC. The second variant of the HTC One M9 to be announced, the M9+ is a premium phone with a larger Quad-HD screen and a fingerprint sensor, while the HTC One E9+ is a plastic phablet with a larger Quad-HD screen.

The HTC One M9+ was announced for the Chinese market and, to our knowledge, it is not officially coming to the UK. However, there will be ways and means of getting hold of it.

The fact HTC hasn't yet announced official pricing is therefore largely irrelevant; when buying from

the grey market you will have to pay whatever the site requests. In general, though, buying tech from China is cheaper than from the UK (even taking into account Customs charges), which may mean you'll be able to buy a HTC One M9+ for less than what you'll pay for the HTC One M9 (currently £569 SIM-free in the UK), despite the improved specification.

HTC has not yet announced the exact release date of the HTC One M9+ in China. At a guess, following its usual pattern, we'd suggest it will be available from the end of April.

The HTC One M9+ was rumoured to come with a 5.5in Quad HD screen, BoomSound speakers, a 2.3GHz Snapdragon 810 octa-core chip with Adreno 430 graphics and 3GB of RAM, plus 32GB of storage. At the rear of the phone there would be a 20Mp camera, and at the front a 4Mp Ultrapixel model. A 3000mAh battery would keep it all going, and HTC Sense 7.0 would be installed alongside Lollipop.

Only some of those rumours were true, it would appear. HTC has indeed placed a larger Quad-HD (2560x1440) screen at the front, but it's 5.2in, not 5.5in. There is also a touch-based fingerprint sensor built into the Home button, but inside is not a Snapdragon 810 but a MediaTek Helio X10 processor, another 64-bit chip with eight Cortex-A53 cores running at up to 2.2GHz.

As expected the HTC One M9+ features BoomSound front-facing speakers and a 20Mp rear camera. This is a Duo Camera, like that seen on the HTC One M8, with a secondary sensor for depth. An UltraPixel camera is found at the front camera, as is the case with the HTC One M9. There's also 3GB of RAM and a 2840mAh battery.



HTC One E9+

A cheaper plastic phablet

Another China-only release, the E9+ is a cheaper plastic version of the One M9 with a 5.5in phablet screen

The rumoured plastic HTC One M9 phablet - the HTC One E9+ - has been confirmed for the Chinese market by HTC. There is no guarantee that this phone will officially come to the UK, although as with the M9+ you'll be able to get one through unofficial channels.

We'll bring you full details of pricing and availability as it emerges, but in the meantime you can expect this plastic HTC One E9+ to be at least

£50- to £100 cheaper than the HTC One M9, which went on sale in the UK at the end of March from £569 SIM-free.

Standout features in the E9+ include a 5.5in Quad-HD display with 534ppi density, and great sound with Dolby Audio and BoomSound speakers.

Inside the HTC One E9+ is a 64-bit MediaTek MT6795M octa-core chip with 2GB of RAM and 16GB of storage. There's a 2800mAh battery to keep it all going, and the E9+ still weighs only 150g.

Connectivity-wise there's dual-band 802.11ac

Wi-Fi, Bluetooth 4.1 and NFC.

The E9+ is also a 4G phone, with support for FDD-LTE and TD-LTE bands. The fact it is also a dual-SIM phone suggests to us that it won't be officially released in the UK.

According to the Chinese site the E9+ matches the One M9 with a 20Mp rear camera and HTC's UltraPixel camera at the front, but this has been reported to be an error, and the E9+ will actually feature a 13Mp rear camera.

The HTC One E9+ will run Android 5.0 Lollipop with HTC Sense 7.0 out of the box. It will be available in meteor grey, gold sepia and rose gold two-tone colour options.





BT returns to mobile market with best 4G deals in the UK

The communications giant is back to the mobile market with a massive bang, offering unrivalled 4G data plans

Having acquired EE for £12.5bn comms giant BT is returning to the mobile market, offering unrivalled 4G SIM-only plans for BT Broadband customers from just £5 per month.

All BT's mobile plans come with free access to BT Sport, which holds the viewing rights to exclusive Barclays Premier League football matches, plus unlimited access to BT Wi-Fi hotspots. On a 12-month SIM-only plan from BT you can also make use of parental controls, and switch freely between plans during your contract.

There are three tariffs to choose from, with the cheapest just £5 a month for BT Broadband customers (£10 for everyone else). This deal nets you 500MB of 4G data, unlimited texts and 200 minutes.

A second plan is suited to regular internet users, with BT charging £12 a month (£17 for everyone else) for 2GB of 4G data, unlimited texts and 500 minutes.

Finally, heavy internet users can grab a massive 20GB of 4G data, unlimited texts and unlimited minutes for £20 a month (£25 for everyone else).

By comparison, Vodafone is offering a special deal on the same tariff (Red XXL), but even while it's reduced by £10 it's still £10 more expensive than BT's 20GB plan at £30 per month.

EE's highest 4G SIM-only plan offers 5GB of 4G data for £27.99 a month, O2 offers 8GB for £30 per month and Three offers unlimited everything from £27 per month. Even GiffGaff can't compete with BT, charging £18 per month for 5GB of 4G data, unlimited texts and 1,000 minutes.

John Petter, chief executive of BT Consumer, said: "Our customers are consuming increasing amounts of data and they want the best possible connection wherever they are. We will meet this demand by combining the power of our fixed fibre service with Wi-Fi and the convenience of mobile."

All BT's plans are SIM-only and for 12 months. You can use your existing phone, or pick up a 4G phone from the BT Shop from £99. BT Mobile customers can also benefit from a £50 discount.

Any person living within a BT Broadband household can take advantage of the deal, and a customer can have up to five plans on one bill to cover the entire family.



4G vs LTE

What's the difference?

4G isn't the same thing as LTE. We explain the difference, and why you're not getting true 4G speeds

4 G, LTE, LTE-A, carrier aggregation. It's all tech nonsense if you don't understand what the jargon means. Here we explain the differences between 4G and LTE so you're better equipped to choose the best phone and the best tariff.

There are a lot of decisions to make when getting a new phone. Along with deciding which handset is best for you, you might also have to choose a new tariff, and that's a complex business in itself.

4G is the latest buzzword you'll hear or see, but what exactly is 4G? Is it the same as LTE? In a word,

no, but phone manufacturers and mobile operators love to use them interchangeably, and further muddy the waters with dumbed-down marketing materials.

In this article, we'll explain everything you need to know about 4G, the speeds you can expect to get and equip you to choose a phone and tariff that's right for you.

What is 4G?

The International Telecommunications Union-Radio (ITU-R) is the United Nations official agency for all manner of information and communication technologies, which decided on the specifications for the 4G standard in March 2008.

It decided that the peak download speeds for 4G should be 100Mb/s for high mobility devices, such as when you're using a phone in a car or on a train.

When you're stationary (low-mobility local wireless access), it decided that 4G should be able to deliver speeds up to around 1Gb/s.



If true 4G is supposed to offer us download speeds of up to 1G/s, then why are we getting 100x less in the UK, at around 10-12Mb/s.

Unfortunately the ITU-R doesn't have control over the implementation of the standard, which led to first-generation technologies like LTE being criticised for not being up to scratch with true 4G.

The reason for this is that other groups (3GPP being an example) that work with the technology companies who develop the hardware had already decided upon next-gen technologies, leaving us with sub-standard 4G capabilities.

What is LTE?

Though originally marketed as 4G technology, LTE (Long Term Evolution) didn't satisfy the technical requirements that the ITU-R outlined, meaning that many early tariffs sold as 4G weren't actually 4G.

However due to marketing pressures and the significant advancements that LTE brings to original





3G technologies, the ITU later decided that LTE could be called 4G technology.

So, LTE is a first-generation 4G technology that should theoretically reach speeds of around 100Mb/s. Unfortunately, Ofcom reports that the UK average is around 15.1Mb/s. While that's around twice the speed of an average 3G connection, it's a long way off from the theoretical top speed of LTE.

As well as lacking in overall download speed, LTE also lacks uplink spectral efficiency and speed. Uplink spectral efficiency refers to the efficiency of the rate that data is uploaded and transmitted.

It falls short of the true 4G capacity mainly because of the lack of carrier aggregation and also phones not having many antennae. MIMO (Multiple Input Multiple Output) is a practical technique for sending and receiving more than one data signal on the same channel at the same time by using more than one antenna.



With better carrier aggregation and MIMO, we can head towards a new standard: LTE Advanced. This is also known as 'true' 4G.

Imagine playing a PlayStation 3 when you could be playing a PlayStation 4. The PS3 isn't necessarily too slow to use, but you'd have a better experience using the faster console, the PS4. It's the same with LTE – LTE is the PlayStation 3 and LTE Advanced (LTE-A) is the PlayStation 4.

What is carrier aggregation?

Carrier aggregation is part of LTE-Advanced and lets operators treat multiple radio channels in different or the same frequency bands as if they were one, producing quicker speeds and enabling users to be able to perform bandwidth hogging activities like streaming HD video much faster than ever before.

Think of your wireless connection as a pipe. You can't increase the size of the pipe, but you can add a

second and third pipe. Use all three simultaneously and you'll have three times the flow rate. It's the same concept with carrier aggregation.

Another advantage of carrier aggregation is that speeds don't decrease, no matter how far away from the cell tower you are.

Combining two signals - or channels - should double the download speed to around 150Mb/s. In future, there could be aggregation across more than two channels, potentially up to five, which was defined in the LTE Advanced standard.

What about HSPA+?

HSPA+ may be marketed as 4G technology but it's technically 3G. HSPA+ stands for High Speed Packet Access Plus. It was the next step after 3G, with UK network provider Three aiming for it to be used by 2012 (before the introduction of LTE).

The technology was developed with a theoretical top speed of 21Mb/s, which is pretty impressive for



technology that doesn't count as 4G (3G has an average speed of around 1Mb/s). However, it was quite a way away from its theoretical top speed as the average is around 4Mb/s.

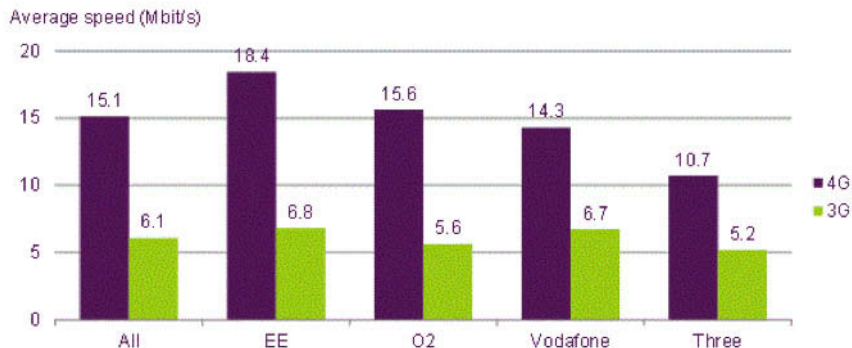
Who offers the fastest 4G LTE connection?

Now you know more about what the difference is between true 4G and the 4G LTE we're being sold, which UK network provides the best 4G LTE connection? In November 2014, Ofcom tested the 3G and 4G connections of every major provider in the UK in five cities.

The results proved that EE has the fastest 4G LTE connection, measuring in at 18.4Mb/s on average, though still far from the theoretical top speed of LTE.

It's not just the download speed that dictates overall responsiveness of a 4G connection; latency also plays an important part. A lower latency provides better responsiveness and reduced delays when using data for browsing and video calling.

Surprisingly, EE wasn't the best provider when it came to latency – that award went to Three. Ofcom



reports that Three took the least time to deliver data on both 4G (47.6ms) and 3G (53.8 ms), while O2 came last with the highest levels of latency, measuring in at 62.7ms on 4G and 86.4ms on 3G.

LTE-A: Availability

Surprisingly, LTE-A is already available in selected areas – Vodafone announced the start of its LTE-A rollout in October last year in Birmingham, Manchester and London. EE has also joined the LTE-A race, trialling the technology in London's Tech City. Upgrading infrastructure to support LTE-A will be a slow process and is likely to take a couple of years, much like the initial 4G rollout. You won't automatically get LTE-A though: there are other factors that have to be taken into consideration.

The main one is compatibility. Your phone needs to be able to support LTE-A. As it was with the 3G to 4G migration, many existing phones don't have the technology to be compatible with LTE-A. There are a few exceptions though, including: Amazon Fire phone, iPhone 6 and iPhone 6 Plus, Blackberry Z10/Z30/Q10/Passport, HTC One M8 & M9, Motorola Nexus 6, LG G Flex 2 & G3, Huawei Honor 6, Galaxy Note 3 & 4, Galaxy Note Edge, Galaxy Note S4, S5 & S6, and the Sony Xperia Z2 & Z3.

The good news is that it appears that both Vodafone and EE aren't charging people for the extra speed. As long as you're in a supported area and using a compatible phone, you should be able to enjoy the benefits of LTE-A's carrier aggregation and see download speeds of around 150Mb/s. Just watch out you don't burn through your monthly data allowance in a few minutes.



Amazon Fire TV Stick

Now available in the UK

Amazon takes on Google Chromecast and Roku's Streaming Stick with its Fire TV Stick

Amazon's Fire TV Stick, a rival to the Google Chromecast and Roku Streaming Stick, is now available in the UK.

The Fire TV Stick is an HDMI dongle version of the Fire TV set-top media streaming box. It's a very similar product to Google Chromecast and Roku's Streaming Stick.

"Fire TV Stick combines all your favourite subscriptions and streaming services with Amazon's massive selection of digital content. Watch tens of thousands of TV episodes and movies, rent videos

from just £0.59, or kick back with your favourite sports, news, music and games," said Amazon.

The Fire TV Stick was previously available only in the US, but today comes to the UK. You can now pre-order it and it will officially go on sale on 15 April.

The Fire TV Stick costs £35, with all Amazon Prime members able to pick one up for £19.

The Fire TV Stick plugs directly into your TV (or a monitor with an HDMI port) and connects to your router so you can stream content over the internet. It comes with services such as Netflix, Amazon Prime Instant Video, Spotify and Plex.

Unlike the Chromecast, the Fire TV Stick comes with a physical remote control but can also be controlled via an Android app. The iOS app is coming soon. If you like, you can buy the Amazon Fire TV Voice Remote control for use with the Fire TV Stick but voice search is available on the app.

If you're not a Prime member, then the Fire TV Stick is a good way of trying the 30-day trial and Amazon touts access to 200,000 TV episodes and movies, millions of songs, and hundreds of games via the device.

Amazon boasts that the Fire TV has four times the storage (8GB) and twice the memory (1GB) of the Chromecast. It also features a dual-core processor and dual-band Wi-Fi with MIMO.





The components that will power your next phone

Qualcomm, MediaTek, Samsung and LG are all working on exciting new products

The past couple of months have seen the launch of a clutch of new phones – and also new chipsets that aim to make the next generation of phones more powerful and simpler to recharge.

Competition between processor makers is increasing, with companies spurring each other to improve performance. Here are the components and technologies that will help make it happen:

Qualcomm's next-generation chips

The Snapdragon 820 will be the first processor to use Qualcomm's homegrown ARM-based Kryo

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Qualcomm will still face stiff competition from companies such as MediaTek and Intel - and even Samsung

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architecture – and also the first to use the company’s new Zeroth platform for adding machine learning capabilities. The company plans to make samples available to phone manufacturers in the second half of the year. Qualcomm will need to have the chips ready for mass production in the first half of 2016 to catch the next wave of high-end smartphone launches, or manufacturers may look elsewhere.

In February, the company also launched four new processors for mid-range smartphones, including the Snapdragon 620. This eight-core processor integrates LTE-Advanced and has enough power to shoot 4K video at 30fps. The first devices containing it will go on sale during the second half of the year.

All this doesn’t change the fact that Qualcomm will still face stiff competition from companies such as MediaTek and Intel, which despite all its struggles in the mobile space doesn’t seem ready to give up anytime soon. Also, if the Samsung’s Galaxy S6 and S6 Edge become big successes it might embolden the company to use its own Exynos processors in more products.

LG’s Neo Edge screen technology

Smartphone vendors try to tempt us to upgrade with screen improvements. Typically, they target screen size and resolution, but these have reached a plateau, especially on high-end products, so display



makers are turning their attention to other areas, including the size of the bezel.

At the end of 2014, LG Display said it had developed a 5.3in full HD panel for smartphones with the world's narrowest bezel at 0.7mm – less than the thickness of a credit card. The development has been possible thanks to a technology LG calls Neo Edge, which uses an adhesive instead of double-sided tape to attach and seal the edges of the panel's circuit board and backlight unit.

Hopefully, the company will be able marry the technology higher resolution screens, as well. On screen sizes around 5.5in just a couple of millimetres can do a lot to improve handling. Even if it can't, the 5.3in screen could if combined with the Snapdragon 620 processor and Samsung's new 128GB storage

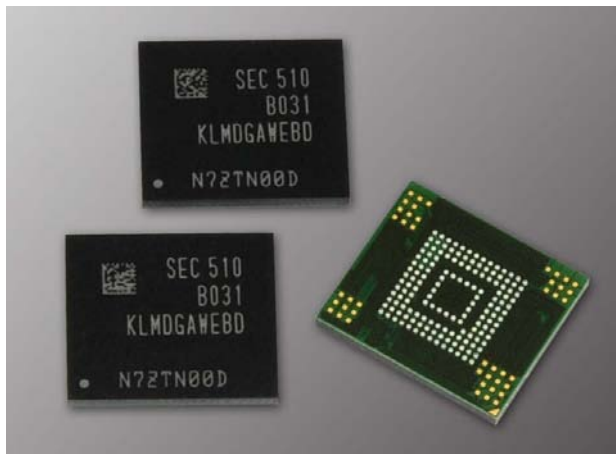
module form the basis of a really competitive mid-range smartphone.

Samsung's 128GB integrated storage

One area where affordable smartphones have trailed their more expensive counterparts is integrated storage size, but a chipset Samsung launched recently may signal a change. The company's new 128GB storage product is targeted at mid-range smartphones and tablets, the company said.

Even though high-end smartphones use storage with better performance, the development adds to the attraction of budget smartphones, which have recently improved to such an extent that they make it harder to decide whether buying higher-end models is really worthwhile.

Samsung expects to see devices with 128GB of storage in the near future. To what extent that happens remains to be seen, but it seems unlikely since vendors like to upgrade their products in small increments, and many existing models have



just 8GB of storage today. Samsung hopes vendors will forego microSD card slots and instead use its chipset to keep consumers happy. That's what the company has already done on its own Galaxy S6 and S6 edge.

Wireless charging chipset from MediaTek

So far, wireless charging has mainly been an option on high-end smartphones, but that looks likely to change this year. This month MediaTek launched a chipset that aims to make the technology available on more affordable devices.

One of the main advantages with the MT3188 is compatibility with all existing standards for wireless charging, so users aren't limited in what chargers they can use. The chipset is currently in mass production and will be adopted by smartphones as well as tablets and wearables, says MediaTek.

Chip maker NXP Semiconductors is also helping

lay the groundwork to boost wireless charging adoption.

The company recently introduced a reference design that will help cut the cost of wireless chargers based on the Qi specification. A reference design is a blueprint that makes it easier for vendors to build products, in this case a charger based on NXP's components.





New haptics technology to transform mobile gadgets

The era of ubiquitous haptic user interfaces has been predicted for two decades. Now it's finally here

Haptics aren't new. When you put your smartphone on 'vibrate', or when you play first-person shooters on your Xbox, those vibrations are called haptics.

Most people are familiar with broad applications of haptics such as those. In the case of a phone, it's usually just a utilitarian vibration that you're supposed to notice. In the case of the Xbox game, the haptics help create a richer experience that

strengthens the illusion or immersion into a game. Three new uses for haptics in widely used consumer devices are helping to usher in what Wired called a “Neo-Sensory Age” of incredible haptics-enabled experiences.

The first is for augmenting the tactile experience of using hardware. The second is for conveying pattern-specific information. The third is for communicating.

Here’s how all three will transform the experience of using your gadgets.

Augmenting the tactile experience

Last year, Amazon launched two ebook readers and three Android tablets. One of the most interesting of these is the Kindle Voyage.

To both the left and right of the Voyage’s screen (which itself is textured to simulate the feeling of paper), Amazon designed touch zones for turning pages. A gentle squeeze on either side turns the

page of the book you’re reading, accompanied by a haptic vibration to substitute the feeling of paper sliding across paper.

Likewise, the recently announced Apple MacBook has a touchpad that uses sophisticated haptics that add another dimension to the experience of using the hardware itself. The Apple Watch also has a ‘Taptics engine’ for providing some interesting and targeted haptic feedback.



When you turn the Watch's crown, which Apple has sub-branded the Digital Crown, there's an instant and specific haptic vibration that dances on your wrist to enhance the experience of feeling the metal scrolling wheel. When you draw on the screen, press the big button under the crown or do any number of things, the Taptic engine sends physical sensations to your wrist to accompany those actions in a way that reinforces to your brain what you're doing.



And Samsung recently unveiled its Smart MultiXpress series of multifunction printers, which have a tablet-like user interface with haptics designed to simulate on-screen controls.

These new devices are all taking advantage of a new field of engineering called haptography, which involves recording physical sensations and later playing them back to simulate the action associated with the sensation that was recorded. Haptography is still in its infancy. As it becomes more sophisticated, our devices will gain a third dimension, with textures you can feel added to what you see and hear. Those cold, flat screens on mobile phones and tablets will come alive. All kinds of user interfaces, from car dashboards to refrigerator doors and TV remotes, will respond to our touch by touching us back. It will make these experiences more compelling and even addicting.

Conveying pattern-specific information

The Apple Watch also conveys pattern-specific information. For example, when using turn-by-turn directions in Apple Maps on the watch, the Taptics



engine will give you directions by zapping the left or right side of the watch. You can follow the directions without looking at the watch, because the basic information is conveyed with vibration.

A new 2015 Mercedes hybrid car called the S550 includes haptic feedback that conveys critical information through your foot. Specifically, it sends a certain vibration through your foot that serves as a recommendation to back off on the gas pedal and coast to save juice or charge the battery. A different vibration tells you when the car switches from electricity to gas.

Wearable computing devices such as smartglasses (which, unlike Google Glass, look like regular glasses) will vibrate in specific ways to alert the user silently to different kinds of information.

Communicating

One of the most interesting applications of haptics is for communicating with other people. This is one of the most compelling uses for the Apple Watch. If you select a person from your list of favourites

and then tap on the screen, the person you selected feels those taps (assuming that they are wearing an Apple Watch). You can also send your heartbeat to that person's Apple Watch, and you both will see a beating heart on the screens of your watches and feel a haptic simulation of your heartbeat.

This is similar to numerous devices from startups, such as the Tactilu bracelet, which transmits touch from one person to another. As one user touches her bracelet, the other user feels it on his.

You'll be able to "reach out and touch someone" with your phone as a matter of course. Whatever you touch on its screen will be conveyed to the other person if he or she is holding a compatible phone. The generic vibration pattern of your phone's vibrate mode will be replaced by custom patterns of vibration for specific individuals, so you'll know who's calling without looking at the phone.

What's amazing about this isn't the practical laziness of having the information that a specific



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**Haptics will add depth, texture and -
literally - a good feeling to computers, phones
and wearable devices**

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person is trying to reach you, but the psychological experience of near telepathy where you suddenly ‘feel’ a person’s presence.

How haptics improve the user experience

We are just at the beginning of the ‘Neo-Sensory Age’. Over the next couple of years, extremely lifelike haptics will be integrated into all kinds of devices. It will reach the point where consumer expectations will compel vendors to integrate high-quality haptics into all of their gadgets.

As we’ve seen with the Apple Watch, this will be especially true of wearable computing devices. In fact, some will use haptics as their only interface.

Haptics will add depth and texture and – literally – a good feeling to computers, phones and wearable devices, as well as car dashboards and home automation appliances. They’ll have some practical benefit, but mostly they’ll make us love our gadgets.

The world of ubiquitous haptic user interfaces has been predicted, promised and hinted at for two decades. Now it’s finally here. Can you feel it?



Badges of honour

How Google won MWC 2015 with tiny Android pins,
 by Chris Martin

Back in March, MWC 2015 took place in Barcelona and this is the story of how Google stole the show with a simple but extremely effective PR stunt.

As we do every year, we packed our bags and set off for sunny (warmer than the UK) Spain to check out all the new smartphones, tablets, wearables and other gadgets on offer. Around 85,000 head to the Fira Gran Via for eight halls' worth of shiny new things.

The week started off as per usual with me and my colleague, Ashleigh Allsopp, wandering round the show getting our hands on products, taking photos and videos of them to post on the web site. As we



were leaving the Acer stand someone handed us each a small packet that contained a tiny pin badge. We thought it was quite cool, but we simply put it away and thought nothing of it.

However, the next day at the show we realised it was much more than a little giveaway that Acer had decided to do. That badge was in fact one of 124 designs that were available to collect at the show. Each a different character with a name from the firm's current 'be together, not the same' campaign. We suddenly felt like young teenagers again in a sort of Pokémon 'gotta catch them all' type way.

Google had many partners at MWC showing off various devices running Android and it put something in place that changed the show entirely. Each of Google's partners was given a 2ft high Android statue to display – that reportedly cost \$10,000 – and each day those stands had exclusive Android pin badges to give away. Google has given

away pins before, but not on this scale – a total of 200,000 were given out.

A handy map showed you which stands had the pins and which one they might give you. There were also two outside Android stands and Google staff walking around the show with satchels full of the pins who would gladly hand out any you hadn't collected, plus a candy lollipop – to match the name of the most recent version of Android.

It really changed the feel of the entire show and saw all kinds of people running around trying to get new pins – from PR women to business men in suits. It was quite a spectacle. Even people at the office were asking us to bring some back for them.

Some pins were harder to come by than others, and Google had even set up a site where you could tick off which ones you had collected and trade duplicates with others at the show. There were many we wanted but just couldn't find and didn't realistically have the time to. Since returning from the show we discovered the most hard-to-find pins were found by locating a particular Googler and making sure you were wearing pins and they would give you a badge.

We quickly realised we wouldn't be able to collect them all but did our best. Handily, the stands we needed to visit were mostly ones handing out pins, though some that were listed on the special map seemed to have no idea about it (IBM and Nokia).

In the end, we managed around a third of the 124 goal, and we didn't particularly mind as it just made the show for us and for many others. I'm sure there will be copycat attempts at future shows, but it won't be the same as MWC 2015.



You look familiar

Why the Galaxy S6 makes Samsung look stupid,
by Ashleigh Allsopp

Samsung unveiled its new Galaxy S6 smartphone at MWC 2015, surprising us with its many similarities to Apple. Now, I love the iPhone, but I don't love everything about it. I love the design, but I don't love the non-removable battery or the lack of microSD card slot, or the fact that it's not waterproof. Weirdly, Samsung seems to have taken several steps backward with the S6, and those aforementioned Apple similarities are things we don't like about the iPhone, all of which the S6's predecessor boasted. What's going on, Samsung?

Yes, that's right, the S6 doesn't have a microSD card slot, so you'll have to pick from 32-, 64- or 128GB when you buy it in the same way that you

have to with the iPhone 6. You won't be able to replace the battery easily, so if something goes wrong it's not a simple case of popping off the back and slotting in a new battery.

Additionally, damaging the horribly shiny glass back is worse than ever because you won't be able to simply buy a new one and pop it on. What's worse is that if you were used to the stress-free waterproof factor that came with the S5 you'll have to re-adjust to the fact that if you drop the S6 down the toilet, it's probably going to be a costly mistake.

It seems that these sacrifices have been made in favour of a more premium design that does away with the plastic and introduces an iPhone 4/4s-like glass front and back, combined with sides that have an uncanny resemblance to the iPhone 6/6 Plus, complete with drilled speaker holes along the bottom and even a protruding camera on the rear. I think the new design is ugly, and the glass portions have a mirrored effect that take bling to a new level.

Samsung has been attacking Apple in its adverts for years, but this backtrack highlights one of the reasons its Apple-bashing ads were a mistake. When the S3 came out, Samsung published its 'It doesn't take a Genius' print ad comparing the new smartphone with the iPhone 5. Some of the qualities it mentioned about the S3 included the microSD card slot and the removable battery – looks like you'll need to cross those off the list now Samsung.

What's even weirder is how Samsung has backtracked when it comes to software, highlighting that the company has taken away 40 percent of its software features. If it was so unnecessary why was it there in the first place?

The S6 does still have a lot going for it. It has an amazing 577ppi screen, the powerful processor and that improved fingerprint scanner (one of the only qualities that we're glad it copied from Apple). The S6 Edge also offers additional option for those looking for something a bit more innovative, even if the edge doesn't actually do an awful lot.

But I'm not sure it's enough to stop Samsung's fans feeling let down by the decisions it's made with the S6. They have always had pride in being different from Apple, but now it's more difficult, and while it doesn't mean they'll suddenly become Apple fans, there are plenty of great Android competitors that have just become more appealing than ever.





The One M9 won't be HTC's knight in shining armour

The company will once again face competitors with higher marketing budgets, and this time they have better products as well

The One M9 may be a knockout, but it's not likely to save HTC. The device looks similar to its predecessor at a time when competitors have multiplied and stepped up their game, making it even harder for the struggling company to make a mark in the high-end segment.

Design has, since the launch of the first One model, been HTC's biggest strength. The HTC One M9, however, doesn't have the same wow factor as its predecessors since the design is no longer as groundbreaking.

“To most consumers the One M9 will look almost identical to the One M8, which preceded it, and that’s a big challenge for HTC,” explained Ben Wood, chief of research at CCS Insight.

This feeling of déjà vu is highlighted in our review on page 34. HTC’s uphill battle is made more difficult by advancements made by Apple and Samsung, with bigger screens on, respectively, the iPhone 6 and 6 Plus, and the design and hardware of the Galaxy S6 and S6 edge.

Samsung is under pressure to improve sales after a disappointing 2014, and is about to unleash the biggest marketing campaign in its history, which HTC can’t hope to match, according to Wood. Also, the fact that the Galaxy S6 costs the same yet has more impressive specs than the One M9 is bad news for HTC.





The One M9 will also face new competitors in some parts of the world, including the Note Pro from Xiaomi, which has more integrated storage, RAM and more pixels per inch.

High-end products serve two purposes: to generate sales and propel the rest of a company's portfolio. Not having a successful flagship phone has been a problem for HTC for some time.

The company's shipments fell by 2 percent year over year in the fourth quarter, while the overall market grew by 31 percent. It was the vendor's twelfth straight quarter of global volume decline and it continued to lose traction in the important North America and China regions, according to market research company Strategy Analytics. HTC's market share was a measly 1.2 percent, it said.

Declining unit sales can make life more difficult for smartphone vendors. It becomes harder to secure the best components since chipmakers prioritise larger competitors. From that point of view, Samsung's choice of its own processor over Qualcomm's Snapdragon 810, which powers the One M9, was a good thing for HTC.

To grow, HTC plans to launch more mid-range models in key territories like Taiwan (its home market), and to expand into tablets and wearables. However, a more diversified product portfolio will take resources and time to develop – time and money that HTC simply does not have in its current weakened state, according to Strategy Analytics.

Wood is bit more upbeat in his assessment of HTC's expansion: "Partnering with Under Armour on the Grip fitness band and with Valve on the Vive virtual reality headset are smart moves."

Strategy Analytics thinks the best option for HTC is to merge with a company like Xiaomi or Huawei Technologies – both Chinese companies. The rationale for such a deal would be the same as the strategy behind Lenovo's acquisition of Motorola Mobility from Google: to combine forces for a bigger footprint in global markets. However, mergers and acquisitions are always risky, and a smartphone market without HTC would be a little less exciting.



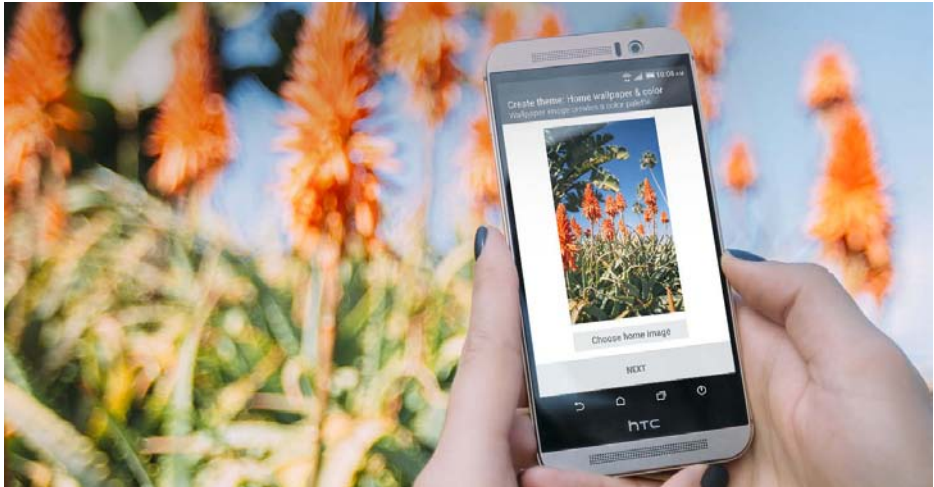


HTC One M9 vs Samsung Galaxy S6

Two new flagship phones were announced by Samsung and HTC at this year's MWC, but which is best?

On 1 March Samsung and HTC both unveiled their new flagship smartphones for 2015, but which is best? We compare the specs in our Samsung Galaxy S6 vs HTC One M9 comparison.

Both phones were unveiled in press conferences prior to MWC 2015 on 1 March 2015. The HTC One M9 was first to go on sale on 31 March from £569, while the Samsung Galaxy S6 (and S6 Edge) went on sale on 10 April from £599 and £760 respectively.



Design and build

The HTC One M9 looks very similar to its predecessor, but now has a scratch-resistant coating, machine-drilled buttons and a sapphire glass lens on the rear of the camera. The power button has moved to the side, and HTC has employed a new two-tone design with the back and sides getting contrasting adonisation.

The Galaxy S6 shows much more of a departure from the norm for Samsung, with the company finally tackling plastic build quality concerns. This phone actually looks a bit like the iPhone 6. While last year's Samsung Galaxy S5 had a dimpled plastic rear cover, the S6's mirror-finish metallic back is made with Gorilla Glass 4, just like the display. Like the HTC the S6 now has a unibody design with a metal frame, which will upset some long-term Samsung fans as there is no longer a removable battery or support for microSD. (HTC's is also non-removable, but it has squeezed in a microSD slot.)



clocked at 2GHz and four at 1.5GHz. Samsung has opted for its own Exynos 7420 processor, another 64-bit octa-core chip, with four cores clocked at 1.5GHz and four at 2.1GHz. Both phones have 3GB of RAM. The Samsung Galaxy S6 was significantly faster in our benchmarks, and although these should be taken with a pinch of salt, both it and the Galaxy S6 Edge are faster than anything we've ever seen.

Storage

Both the Samsung Galaxy S6 and HTC One M9 come with 32GB of storage, and the Samsung is also available in 64- and 128GB models. Sadly, the Samsung Galaxy S6 has lost its microSD support; the HTC One M9 supports microSD up to 128GB, meaning it has 32GB more total storage potential than the Galaxy S6.

Cameras

Photography is another area in which it is difficult to judge performance on specs alone. However, HTC has moved its One M8's 4Mp UltraPixel camera to the front and placed at the rear a 20Mp camera. Although this means it's lost its dual-camera setup at the back, this one uses a dynamic exposure algorithm that produces a similar effect.

At 20Mp it's higher in megapixels than Samsung's

16Mp camera, but this has been tweaked since the S5 with smart optical image stabilisation, an IR sensor that can automatically adjust white balance, a f1.9 wide-angle lens, and the fact it is always on in the background allowing you to pick it up and begin shooting in 0.7 seconds. At the front of the S6 is a 5Mp camera with real-time HDR. Both HTC and Samsung support 4K video recording.

Other hardware

Beyond core specs, the Galaxy S6 comes with dual-band 802.11a/b/g/n/ac Wi-Fi, Wi-Fi Direct, Wi-Fi hotspot, NFC, Bluetooth 4.1, A-GPS and an IR blaster. The fingerprint scanner and heart-rate monitor are also still present, with the former working via touch rather than swipe. Samsung has also unveiled its Samsung Pay mobile payments service, which will be coming to the UK later this year.

HTC offers high-end wireless connectivity to match the Samsung Galaxy S6, but no fingerprint scanner, heart-rate monitor or mobile payments tech (although NFC is supported).





The HTC has the higher-capacity battery in this comparison, at 2840mAh against the Samsung's 2550mAh. Neither are removable.

Software

The HTC One M9 and Samsung Galaxy S6 both come with Android 5.0 Lollipop, which is the latest version introduced with the Nexus 6 and Nexus 9.

Although they will run the same operating system, the experience will be quite different since Samsung adds its TouchWiz UI and HTC adds Sense 7.0.

Verdict

HTC has traditionally launched some of the prettiest Android phones, but Samsung has turned things around with its all metal and glass, Quad HD Samsung Galaxy S6. With a better screen, faster performance and some extras such as a fingerprint scanner and heart-rate monitor, the Samsung Galaxy S6 would certainly appear to be the better deal.

5 best HTC One M9 cases

Got a shiny new HTC One M9? We've found the best cases for you

If you're looking to buy the gorgeous new HTC One M9, you'll need a case to protect the phone. But with so many available, how do you know which is best for you? We've rounded up five of the best HTC One M9 cases available.



Spigen HTC One M9 Crystal Clear Case

First up is the Crystal Clear Case from Spigen. Clear cases are a good idea for people who appreciate the design of their smartphone, but are scared of dropping it. It has a clear hard-back panel with flexible edges, made possible by a combination of TPU and polycarbonate.

It's also got what Spigen calls 'Extreme Drop Protection', which is air cushion technology in each corner to absorb

impact and reduce damage to your phone. It's also thought about drops where the phone lands on its screen, adding 'lips' to the front of the case that protects the screen from impact.

Price: £4.99 from Amazon



XQISIT Slim Wallet Case

The XQISIT Slim Wallet case is ideal for those of us who like the idea of combining your phone case and wallet. The rather stylish Slim Wallet case has been crafted to be slim, so it's comfortable in your hand. As we mentioned, it also holds up to two bank cards – pretty impressive for an 18mm thick case.

The case features a magnetic closure for a more premium feel, enabling effortless opening and closing. It also stops the front of the case flapping around, a pet hate of ours. The integrated polycarbonate hard case offers improved impact protection, with complete coverage of the screen so there are no issues with scratches.

**Price: £19.99 from
Carphone Warehouse**

HTC Dot View Ice (Premium)

One of the best features of the HTC One M9 is



the interactivity available when used with a HTC Dot View case, much like with the M8. With the screen covered, you can use the dot matrix cover to take calls, check notifications, schedule reminders, get weather updates and more. It's a refreshing take on interactivity with cases, combining a rather retro looking design with innovative technology.

You also get wrap around protection with a clear back and Ice blue dot view cover. If you're not a fan of the Ice blue colour, HTC also produces dark blue and black versions.

Price: £32.99 from HTC



Krusell FrostCover

The Krusell FrostCover caught our eye simply because of its stunning design, rather than wowing us with extra functionality. That's not to say that it's not a decent case though, as this one piece snap-on cover comes with a transparent anti-slip surface. It also has 'feet' at the corners of the case for those heart stopping screen-face-down drops, which should absorb any impact and leave the screen untouched.

Rather than adding bulky buttons to the case to make it easier to press buttons, the FrostCover opts instead for traditional cut-outs that contributes to its simple yet eye-catching design.

Price: £14.99 from HTC

Urban Armour Gear

The Urban Armour Gear, designed specifically for the HTC One M9 is the best option from our

selection with regards to protection, though it comes at a cost. This armour shell has a combination of an impact resistant soft core and feather light composite construction. The result? The Urban Armour Gear meets military drop test standards. It has a HD screen protector to guard against scratches, as well as oversized tactile buttons and a ruggedized grip to improve its overall robustness.

The down side? It adds a lot of bulk to your beautifully thin HTC One M9, more than any of the other cases listed here. With that being said, it may be a sacrifice worth taking, especially for the more accident-prone people (you know who you are).

Price: £23-24 from Urban Armour Gear



5 best Galaxy S6 cases

Samsung's done a lot to improve the build quality in its S6 but, even so, it still needs protecting on the road

Samsung's done a lot to improve the build quality in its new Galaxy S6 phone but, even so, it still needs protecting on the road - particularly with that gorgeous Quad-HD screen. We round up some of the best cases for Samsung Galaxy S6.

Olixar FlexiShield Gel Case

Cheap and cheerful, the £5.99 FlexiShield clips on to the rear of the Samsung Galaxy S6 without adding bulk, aiding grip and protecting it from bumps and scrapes. Slightly raised from the screen, the FlexiShield can also keep the Quad-HD panel from coming into contact with hard surfaces when placed face down. The gel material is strong and durable, and available in blue, light blue, purple or clear.



Verus Damda Slide

Forget those leather flip cases with the credit-card slots that just about everyone will be carrying with their Samsung Galaxy S6. Like those cases the Verus Damda Slide offers storage for two credit cards, but it does so with style: the rear of the case slides open to reveal a secret storage compartment. The £19.99 Verus has lots more going for it, too, with a tough hardshell construction building in ample air space to absorb shock without the case feeling oversized. The satin silver design appeals, too.



YouSave Accessories Samsung Galaxy S6 Case Black PU Leather Wallet Cover

Of course, for some people, the flip case with credit card holder is the only way forward. We like this version from YouSave, made from black PU leather with a magnetic clasp, stitching detail around the edges and even some space for cash. You'll get a screen protector and polishing cloth in the box, too - a bargain at £5.99 from Amazon UK!





Obliq Slim Meta

It's a little on the pricey side at £34.99 from MobileFun, but we really like this stylish S6 case from Obliq. Its two-tone black polycarbonate and titanium space grey metallic-style back plate makes the Samsung Galaxy S6 look even more like an iPhone 6 than it already does - and for some of you that

will be very good news. It's slim, it's lightweight, and it has a matte surface to improve grip.

Official Samsung Galaxy S6 S View Premium Cover Case

Last but not least is the official Samsung Galaxy S6 S View case, which costs £39.99 from MobileFun. This works by replacing the rear cover of the Galaxy S6 and adding a flip-out leather cover to the front, thereby adding as little to the overall size and weight as is possible, and providing ultimate protection for the screen. The S View functionality is cool, allowing you to view incoming calls and messages, control music, check the time or weather and more without even lifting the cover. It's even clever enough to work out what colour case you are using and customise the background colour to compliment it.





Samsung Galaxy S6 vs Samsung Galaxy S6 Edge

With two versions of the Samsung Galaxy S6 available to buy, which should you choose?

There are two versions of the Samsung Galaxy S6, the standard S6 and the S6 Edge, so what's the difference? We look at the specs.

A key difference between these two phones is price, with the Edge costing you an extra £100. While the standard Galaxy S6 costs £599 SIM-free, this is the 32GB version of which there is not a comparable Galaxy S6 Edge. The 64GB S6 will cost you £660 SIM-free, while the 64GB Edge costs £760. Pricing for 128GB models has not been announced.

Design

The Galaxy S6 Edge looks almost identical to the regular Galaxy S6, as you'd expect. Both use a metal frame reminiscent of the iPhone 6, and Gorilla Glass 4 front and back. However, the S6 Edge has a curved screen which wraps both sides. It is also a little sharper around the edges, particularly below the Home button.

Both S6 and S6 Edge are available in black, white and gold, but each has an exclusive colour: blue for the regular S6 and green for the S6 Edge, with the latter our favourite of them all.

With just a couple of colours and the curved sides separating the two on design, it's no surprise that they are almost identical in size. The Galaxy S6 is a tiny bit thinner at 6.8 mm compared to 7mm, but the S6 Edge is lighter at 132g - 6g lighter than its brother. It's worth noting that the thickness doesn't include the protruding rear camera.





No matter which model you choose, Samsung's new design means there will be no removable battery or microSD card slot, plus the device is no longer dust- or waterproof. Three things Galaxy fans will not like to hear.

Hardware

Almost everything on the spec sheet for the Galaxy S6 and Galaxy S6 Edge is the same. This means that either way you'll get a 5.1in SuperAMOLED Quad HD screen, an Exynos 7420 octa-core processor (quad-core 1.5GHz Cortex-A53 and quad-core 2.1GHz Cortex-A57), 3GB of RAM and a Mali-T760 GPU.

Interestingly, in our benchmarks the Edge was significantly faster - in fact, the fastest phone we've ever seen. It scored 5076 points in Geekbench 3.0's multi-core test against the S6's 4438, 990ms in SunSpider against 1048ms, and 39fps in GFXBench 3.0's T-Rex against 30fps.

With both phones you also get dual-band 802.11ac Wi-Fi with MIMO, Bluetooth 4.1, NFC, an IR blaster, USB OTG support and Cat 6 4G LTE support with Samsung's Download Booster. The heart rate monitor remains on the back and the fingerprint scanner just requires a touch rather than a swipe.

Cameras are also the same, at 16Mp on the rear with smart OIS, and 5Mp at the front. You'll get Android 5.0 Lollipop with the latest TouchWiz user interface, and the only software difference is what the dual edge can do. So what is the difference between the Galaxy S6 and Galaxy S6 Edge?

Well before we explain what the dual edge screen does compared to the regular one, there are a couple of small hardware differences to note relating to storage and battery.

While the regular Galaxy S6 comes in 32-, 64- and 128GB capacities, the Edge comes in only 64- or 128GB (as we mentioned earlier, there's no longer a microSD card slot).

The Galaxy S6 Edge's battery is slightly larger at 2600mAh, but the 2550mAh S6 actually fared better in our battery life benchmark, with 6 hours 53 minutes against 6 hours 41 minutes (Geekbench 3.0). Wireless charging is a new feature, with support for





both PMA and Qi protocols, and Samsung touts four hours of usage from 10 minutes charging using the supplied adaptor.

We've already seen an edge screen on the Galaxy Note Edge but while that just wrapped around the right-hand edge, the Galaxy S6 Edge does both. Samsung understandably calls it the dual edge so this is the reason (apart from the green colour) to buy the Edge over the regular S6. But should you?

Apart from looking great, it's more about what the dual edge can offer, and after some hands-on time with the device we realised it doesn't do all that much. You don't get an extra bar there in regular use like on the Note Edge to show icons and the like.

You can choose which side to use, so lefthanded users will be happy, but for most features it seems silly to limit it to just one side. What if that side

happens to be facing away from you because of how you put down the phone?

Once you've chosen which side you want to use, you can get notifications and a clock during the night. However, the main feature is People Edge. When switched on this adds a little grey bar to the side which you can swipe to open your favourite contacts to easily call or txt them.

That's cool, and you can also assign them colour codes so when a contact calls the edge screen will light up that colour so you know who it is. It sounds good, but is designed to work when the device is placed faced down on a flat surface, which we're pretty sure most people won't do.

Apart from the gorgeous bezel-free look of the Galaxy S6 Edge compared to the regular model, we're not convinced it's worth the extra money. There are only a handful of functions and while this may change over time with software updates there's no guarantee.



Verdict

Both S6 and S6 Edge are expensive phones, even considering the fact the price will likely be quick to fall. With no 32GB version of the Galaxy S6 Edge, the starting price of £760 is just too high. It's faster than the standard S6, but both are faster than anything we've ever seen before. The battery is larger, but it doesn't perform as well. The dual-edge feature is cool, but adds little. So it's incredibly difficult to recommend the Galaxy S6 Edge over the standard S6, which we reckon is the best Android phone of 2015 so far.





Review:

Google Nexus Player

Now available in the UK, the Nexus Player isn't a Chromecast beater but shows promise

£79 • play.google.com • ★★★★★

Anounced last October alongside the Nexus 6 and Nexus 9, the Nexus Player is Google's set-top media streamer. It's like Apple's TV, but even more like Amazon's Fire TV. Is it the one to buy? We explain all you need to know in our Google Nexus Player review.

Media streamers used to boast about their vast support for file formats, but these days it's all about the content you can get online. No longer do you need your own local video library: you just search for anything you like and start watching immediately.

Content

So, what does the Nexus Player offer? Being a Google device, it's no surprise that it's a portal to Google Play Movies & TV where you can rent or buy films, TV episodes and box sets. You can also use Google Play Music and – as you'd expect – YouTube (because it's owned by Google).

What Google doesn't have is a streaming service to rival Netflix or Amazon Prime. It has Google Music, but no subscription service for video. It's much more expensive to use a pay-per-view service, so you're much better off signing up for Netflix and renting the odd new movie from Google Play.

The default home screen also has links to a massively slimmed-down Google Play store where you can install some apps and games: the Nexus Player wants to be your go-to device for casual gaming, just like Amazon's Fire TV or Roku 3.

You can play games using the included remote, or spend an extra £35 on the Bluetooth game





controller. That's the same price as Amazon's, to save you checking. Games are divided into three categories: TV Remote, Casual for Gamepad and Action for Gamepad.

It isn't hard to guess what you'll find in each category, but at the moment the selection is pretty limited – just like the Fire TV. You don't need a gamepad to play some action games, though. Fire up Asphalt 8 without a gamepad paired and it will give you a diagram showing how to drive with the standard remote. It's the same with Rayman Fiesta, which is why you'll see them in the TV Remote category with 15 others, including the excellent Badland (which is free).

Action games include Star Wars: KOTOR and Soul Calibur, which are surprisingly expensive at over £6 and £8 respectively. Game progress is synched to your Google account, so you can play on a phone or tablet and then continue where you left off on the Nexus Player.

Apps from the Play store include Netflix, VLC, TED, Bloomberg TV, Plex, dailymotion and others, but there's nothing UK specific so you can't directly watch iPlayer, 4oD or other catch-up services. There's also no Amazon Prime Instant Video app, and we wouldn't be surprised if there never will be.

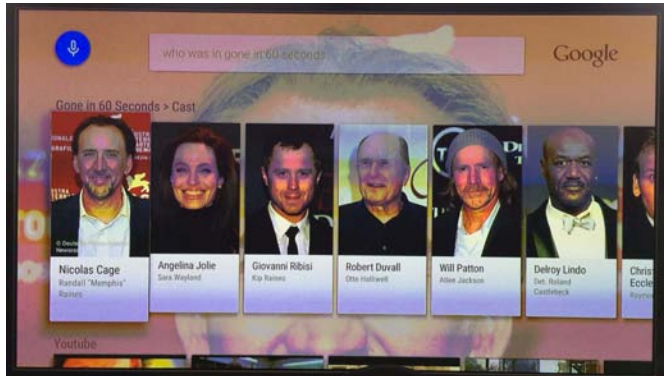
The Nexus Player has an ace up its sleeve, though: Google Cast. Unlike Amazon's box which uses a Fire Tablet as a second screen for IMDB-style info and remote control, you can use an Android phone, tablet, Chromebook or laptop to 'cast' content to your TV via the Nexus Player.

In this respect, the Player is much like the Chromecast: you can use one of many apps and tap the Cast symbol to connect to the Nexus Player. This even works on iPhones and iPads. Fire up the iPlayer app, press the Cast button and you can start watching a show on your TV even though there's no iPlayer app as such.

The stream doesn't come from your phone: it's directly from the internet to the Nexus Player, so you can turn off your iPhone or switch to another app.

You can also watch photo slideshows and videos from your Android phone or tablet using the Cast button, but not from the camera roll on an iOS device, unfortunately.





Interface

Unlike the Chromecast which essentially has no interface, the Nexus Player is the first device to run Android TV – an operating system designed to be operated from your sofa. This isn't to be confused with Google TV, which was developed back in 2010 with Sony, Intel and Logitech and flopped badly.

Android TV is leagues better: it's intuitive and has lots of design cues from Android Lollipop. System menus, icons, animations and even the on-screen keyboard are all blown-up versions from a tablet or phone, and it looks great.

There's certainly still work to be done, but in general you can find your way around easily. To make searching easier without a keyboard, the remote has a built-in microphone that lets you speak to search (just like the Fire TV).

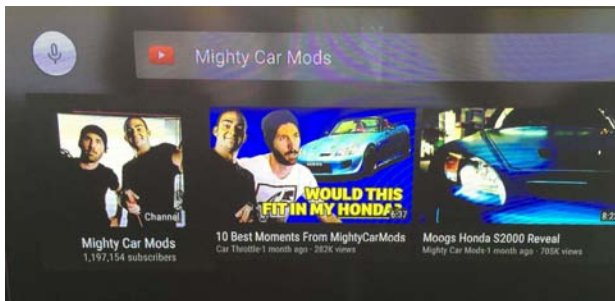
This makes sense as Google Now is already established in Android and even the Chrome web browser. People are getting used to voice searching and it works well – in general – on the Nexus Player. You press the button on the remote, say your piece and the results appear.

It's clever, too, as you can search different platforms in one search by saying "Breaking Bad episodes on Play and outtakes on YouTube". What it doesn't like is background noise. In a room where others are talking, the system doesn't know when to stop listening, and wouldn't stop until we pressed the back button on several occasions. We prefer the Amazon approach of holding the button down while you speak, walkie-talkie style.

You can ask questions as well, such as "Who was in Gone in 60 Seconds?" and a list of actors will appear: you can select one to see other movies and shows they've been in, as well as being able to rent the movie from Google Play.

The search is context aware, so if you're at the home screen you'll get results from Google Play and YouTube, but if you're already in the YouTube 'app', the icon changes in the search box and you see results from YouTube only.

Voice search extends to all the Google services, but it doesn't work in third-party apps including Netflix. You won't see Netflix results when searching from the home screen, for example, and pressing the microphone button in Netflix merely launches the on-screen keyboard.



Options are kept to a minimum, but you can enable SafeSearch in YouTube and filter content in the Play store, just as you can in Android.

You can't have multiple Google accounts and switch between them – a feature we hope will be added in a future update – but there is the option to set up a Restricted Profile and choose which apps and services are allowed, which could be handy if you want to block certain things when your kids are using it. You have to enter a pre-set PIN to exit the Restricted profile and return to 'owner' mode.

“

The YouTube app doesn't remember where you paused or exited a video

”

On the home screen is a carousel of recommended content based on your YouTube subscriptions, browsing history, Google Play library and other factors. It would be nice to also have a 'recent' list so you can quickly go back to something you were watching or playing, but either there's a bug or the feature doesn't exist yet.

Another niggle is that the YouTube app doesn't remember where you paused or exited a video. If you have the 'daydream' function set to show lovely photos after five minutes and press the back button to exit it, you don't end up back at your paused video, so you have to find it again and fast-forward to where you were.

Because you're signed in to your Google account you can see all your subscriptions and playlists on

YouTube, but you can't create a playlist or subscribe to a new channel. Oddly, videos you watch aren't added to your YouTube history, which could be another potential bug that needs fixing.

The Netflix app is the same as on other devices, so if you've used it on an Apple TV or YouView box, you'll be right at home. Your progress through videos is stored as part of your account, so you can dive right into an episode you were watching on another device.

Hardware

There's not all that much to say about the Nexus Player itself, other than it's made by Asus, making this another partnership with Google. Quite obviously, the streamer is circular and underneath is a cutout at the rear for the three connectors: power, HDMI and microUSB. There's no HDMI cable in the box, so make sure you have one ready.

Inside the 'puck' is a 1.8GHz quad-core Intel Atom processor, 1GB RAM, 8GB storage and an





Imagination PowerVR Series 6 GPU. There's no wired Ethernet port, nor an optical S/PDIF which you get with the Fire and Apple TVs, but there is at least the latest 802.11ac Wi-Fi radio and Bluetooth 4.1.

The bundled remote feels a little lightweight, but is nice enough to use. It's similar to the Apple TV and Fire TV with a D-pad and central selection button.

Generally, Android TV zips along on the hardware, but there's the tell-tale glitches of immature software which we're sure will be ironed out in software updates.

Verdict

The Nexus Player is a decent media streamer, but it's not an unqualified success. It's only truly good if you're pairing it with an Android phone or tablet in order to stream a much wider selection of content. However, if you only want to do that, you may as well buy a Chromecast which costs as little as £20 these days. iOS users are better off with an Apple TV.

If you want to play games, it's a pretty much a toss-up between the Amazon Fire TV and Google Nexus Player. Adding the cost of the Bluetooth gamepad, which is a must, the price shoots up to £115, which is dangerously close to previous-generation games consoles.

And we haven't even mentioned the Roku 3, which offers a heck of a lot of content for basically the same price. For those in the UK, the Roku 3 and Streaming Stick are hard to beat.



Review:

New Moto G 4G 2015

Once the best budget phone, the new Moto G 4G can't keep up with the cheaper Moto E 4G

£149 • motorola.co.uk • ★★★★★☆

Motorola's just upgraded its Moto G for the fourth time, and we can't think why it bothered. It's turned what was the best budget phone on the market into something that can't compete with even the cheapest Moto in the line-up. If you think that's a bit harsh, read our new Moto G 4G 2015 review to find out how we justify that comment.

The third Moto G (that would be the model with a 5in screen, 3G connectivity and dual-SIM

functionality) is to this date the best budget phone you can buy in the UK. This new Moto G 4G is in essence the same phone with a couple of tweaks, so why is it suddenly so bad, and why have we marked it down on value?

The problem becomes clear when you take into account the type of customer looking to buy this smartphone. If you want a cheap 4G smartphone then this is not the best Moto for you; Motorola also offers the Moto E 4G, which is £60 cheaper and, bizarrely, faster. It's such a good deal that it makes the Moto G look bad. So the addition of 4G to the Moto G is of little recompense when you consider what Motorola hasn't considered in the new Moto G.

If you want a cheap dual-SIM phone you're going to be annoyed. In upgrading what was a very good budget phone Motorola has taken away its dual-



SIM functionality (why does everyone think us Brits aren't interested in that?) and completely neglected to upgrade the core hardware. And while the Moto G was a great phone last year, this year we want something better for our money.

Given that this Moto G and its predecessor are in essence the same phone (though one has 4G and one is dual-SIM), we've taken a slightly different tack to usual with our new Moto G 4G 2015 review. In each of the key criteria on which we judge a smartphone we'll compare it to the new Moto E 4G.

Moto E and Moto G versions explained

Motorola is desperate to confuse us with its Moto E and G line-ups. In this review we're comparing the very latest Moto G to the very latest Moto E, but it's worth trying to get your head around the differences between the earlier models, all of which are still available to buy (pricing is correct at time of press from Amazon UK).

Moto E 4G





Mk 1 Moto G: 3G connectivity, single-SIM, 4.5in HD screen, 8GB storage, £128

Mk 2 Moto G: 4G connectivity, single-SIM, 4.5in HD screen, 8GB storage, £117

Mk 3 Moto G: 3G connectivity, dual-SIM, 5in HD screen, 8GB storage, £140

Mk 4 Moto G: 4G connectivity, single-SIM, 5in HD screen, 8GB storage, £149

The Moto E is the second-generation E from Motorola. It offers several upgrades over the original Moto E, including 4G connectivity, a faster processor and double the amount of storage (now matching the Moto G at 8GB). The original 3G version of the

Moto E will set you back £70, while right now you can pick up this 4G version for £89. (Motorola has also unveiled a new 3G version of the Moto E, but until that goes on sale in the UK we'll ignore it.)

This puts a price difference of £60 between the £89 new Moto E 4G and £149 new Moto G 4G. As we'll explain below, we cannot for a second imagine why anyone would buy the Moto G 4G over the Moto E 4G.

Design and build

The new Moto E 4G and Moto G 4G are incredibly similar in their design. Both are reasonably chunky, which we've come to expect from budget phones, with curved rears that fit well in the hand. There's just 10g between them, with the Moto E weighing in at 145g and the Moto G 155g.

As before you can change the rear shell on the new Moto E and new Moto G, but with the new





Moto E 4G

Moto E 4G you can also change the grippy band that runs around its edge, allowing you to mix-and-match colours and create your own design. These are optional extras, mind: the Moto E ships with matching black or white shell and band, while the Moto G 4G is available only in black.

(You'll notice our photography depicts a white Moto 4G. It isn't a clever Photoshop trick; this is the otherwise identical mark 3 Moto G.)

The Moto E is a little fatter at 12.3mm (against 11mm), but the Moto G is taller and wider at 71x142mm against the E's 66.8x129.9mm. That's not surprising, since it houses a larger 5in screen. This screen is also higher in resolution, with 720x1280 pixels offering a density of 294ppi. The Moto E's screen is a qHD panel, just 540x960, but stretched over a smaller 4.5in panel not too far behind at 245ppi. Both are splashproof IPS displays with tough Gorilla Glass 3; bright, clear, with realistic colours and good viewing angles.



Turn over the phones and only the Moto G boasts an LED flash. This is important not only for low-light photography, but also if you want to use the phone as a torch. The Lollipop OS includes a quick access toggle to turn on or off the flashlight within the notification bar, which is handy.

Whereas the Moto E has lost one of the two metal bars that sit top and bottom on front to conceal the speaker, the new Moto G 4G retains both and offers very good stereo sound for a budget smartphone.

The new Moto G wins this category, but there's not enough between the pair to warrant its extra cost.

Hardware and performance

One category the new Moto G 4G absolutely does not win is performance. And that's weird, right?

The Moto E is faster in every single benchmark.

It's not difficult to see why when you look at the spec sheets. While both phones have 1GB of RAM and 8GB of storage (plus up to 32GB via microSD), the Moto E has the faster '410' variant of the Qualcomm Snapdragon processor when compared to the Moto G's '400'. Both are quad-core chips clocked at 1.2GHz. It also has the Adreno 306 in place of the Moto G's Adreno 305.

The Moto E was the clear winner in our benchmarks, turning in 464- and 1463 points in the single- and multi-core components of Geekbench 3 respectively, 13- and 6fps in GFXBench 3 T-Rex and Manhattan, and 1301ms in SunSpider. By comparison, those figures for the Moto G: 345- and 1182 points in Geekbench, 11- and 4.2fps in T-Rex and Manhattan, and 1968ms in SunSpider.

When we're talking about flagship phones such differences in performance aren't an especially big deal - the average person is unlikely to grumble with the performance of any high-end smartphone. But when it comes to budget phones performance is key, with core hardware often falling victim to scrimping and saving. Motorola hasn't even

Moto E 4G



bothered to upgrade it for the Moto G, while the upgrades to the Moto E mean it's no longer just a cheap phone for first-time or light users, but a proper Android smartphone that is more than capable enough for day-to-day use.

Cameras

The new Moto G 4G regains the lead in the photography department but, even so, if you're looking for the best camera phone you won't be interested in either of these Motorolas.

The 2015 Moto E update added a front camera to Motorola's cheapest smartphone. It's only a VGA camera and, to be quite honest, it's rubbish - but it allows you to use the Moto E for video chat (probably not selfies). The Moto G improves on this with a 2Mp camera but, although there is a clear difference in clarity here, it's still only 2Mp. The best





selfie phone you can buy today has a 13Mp front camera (we're referring to the HTC Desire Eye), and the new HTC One M9 should join that party with its front-facing UltraPixel camera.

Round the back the Moto G pairs the aforementioned LED flash with an 8Mp camera and f/2.0 aperture, while the Moto E has a 5Mp version with an f/2.2 aperture. They support the same features, including a 4x digital zoom, burst mode, auto HDR, tap to focus, quick capture and slo-mo video. Both support HD (720p) video recording, but we'd really like to see 1080p from the Moto G 4G.

In our test shots you can see the Moto E (above) clearly benefitted from the better weather (these were not taken on the same day), but the Moto G's duller image is much sharper. You'll find more revealing test shots, video and analysis in our full reviews of these phones.

Connectivity, software and battery

In connectivity these handsets are on par, both featuring 4G LTE, Bluetooth 4.0 LE, 802.11b/g/n Wi-Fi

and GPS. As we might have mentioned earlier, the new Moto G 4G is not, like the previous Moto G, a dual-SIM version.

Interestingly these phones are fitted with the same 2390mAh non-removable battery. Motorola promises all-day battery life for each and, given that it has a slightly larger, higher-resolution screen, but less powerful hardware, we'd be surprised if battery life wasn't similar for the Moto E and Moto G.

We ran the new Moto G through the Geekbench 3.0 battery life test. It recorded 7 hours 35 mins, which interestingly is longer than even the Samsung Galaxy S6 (6 hrs 53 mins) and S6 Edge (6 hrs 41 mins), but the battery score is half of those phones at 2024 points.

Both Moto E and G run a vanilla version of Android 5.0 Lollipop out of the box (with guaranteed upgrades to Android M), along with Motorola's usual preinstalled software. This includes Motorola Assist, Alert and Migrate. What it doesn't include - for the Moto G - is the Moto E's cool double-twist gesture to launch the camera.

Verdict

If you're looking for a cheap 4G smartphone then the Moto E 4G is the best deal on the market right now. If you would rather have a cheap dual-SIM phone with 3G connectivity then the mark 3 Moto G is your best bet. But the new Moto G 4G for 2015 is not the best phone for either customer, and its larger, higher-resolution screen, marginally improved photography credentials and stereo sound are not enough for us to turn a blind eye to its £60 higher price, slower hardware and missing software features.



Apple Watch vs Huawei Watch

Apple's iWatch is about to go on sale, but Huawei's Watch was the talk of MWC. We see how they compare

2 015 is dubbed as the year to make or break smartwatches and Apple and Huawei have both gone for the minimalist naming system. Find out how these two wearables differ in our Apple Watch vs Huawei Watch comparison preview.

Huawei has unveiled its Watch, but it hasn't confirmed pricing or release date information. However, Mobile Fun is taking pre-orders for the Huawei Watch at £300 for the black or silver models and £350 for the gold.



At the cheaper price it matches the Apple Watch Sport edition, which will set you back £299. Apple's cheapest model is bound to be the most popular, but you can spend more by opting for the Apple Watch, which starts at £479, or the Apple Watch Edition which starts at £8,000. The most expensive Apple Watch is £13,500. It goes on sale on 24 April.

Design

Since the initial introduction of the Apple Watch last year, we've seen a number of rival manufacturer's bring more luxury designs to their smartwatch line-up including the LG Watch Urbane.

The Huawei Watch is round like LG's latest models, the Motorola Moto 360 and some others while Apple has opted for a square shape. We prefer the round option when it comes to smartwatch screens but each to their own.

There are three colours of the Huawei Watch: silver, black and gold plus the choice of either leather or stainless steel straps. The body choices are just colours rather than a reflection of the material they are made from, though.

That's not bad and there should be at least one you like the look of but pales into insignificance compare to Apple's whopping choice of 38 different combinations of body and strap.

It's partly because the Apple Watch is available in two sizes (38- and 42mm height) to fit different size wrists – a clever move for anyone who doesn't fancy a giant smartwatch on their arm. The Huawei Watch is coincidentally 42mm in diameter and is a little chunky at 11.3mm. The Apple Watch is a little thinner at 10.5mm and varies on weight depending on the model but the smaller model is 40-55g while the bigger case is 50- to 69g.

Both Apple and Huawei use premium materials including stainless steel and sapphire crystal glass but you'll have to pay serious cash if you want Apple's 18-carat rose and yellow gold models.





Apart from touchscreens you can interact with the Apple Watch using the digital crown which sits on the right side of the device. Huawei just uses a simpler on/off button which is also on the right but at the 2 o'clock position to make it easier to press.

Hardware and specs

On hardware, the Huawei Watch fits in with other Android Wear devices meaning it has the usual array of a Qualcomm Snapdragon 400 processor, 4GB of internal storage, 512MB of RAM and Bluetooth 4.1.

Meanwhile, Apple uses its own S1 chip and has double the amount of storage at 8GB. However, as it stands you can only use 2GB for music and just 75MB for photos. Apple doesn't quote RAM.

Both watches have a heart-rate monitor on the back and sensors such as an accelerometer to track activity. Each uses Bluetooth to connect to a phone, but the Apple Watch also has Wi-Fi onboard.

The screens are very different with either round or square on offer. Specs aside this will probably have a big impact on which you choose. Apple's is quoted as Retina while Huawei's is 400x400 pixels.

In terms of battery life, Apple touts up to 18 hours of varied use which drops to 6.5 for audio playback and just 3 for phone calls. The Huawei Watch will last longer, according to the firm, with one and a half to two days usage.

Software

Software is a big difference between the two smartwatches. For starters the Apple Watch will only work with iPhones and the Huawei Watch will only be compatible with Android since it runs Google's Android Wear (although Google is reportedly working towards adding iOS support).

The functionality of each is very similar but the information is presented in a different way. Android Wear uses a card style system to provide notifications and various bits of data like weather and number of steps. You can also interact with it with voice to send messages or ask questions. You can also control music playback on the connected smartphone and the camera shutter.





Something which they share is the ability to install apps like you would on a smartphone or tablet. There are many for Android Wear and while there may be less for the newer Apple Watch system it will quickly go up after launch.

The Apple Watch can do what Android Wear does, providing notifications to the device over Bluetooth and built-in apps include Messages, Phone, Mail, Calendar, Activity, Workout, Maps, Passbook, Siri, Weather and Photos. You can also use the Apple Watch to make payment and with certain partners check into flights, hotel rooms and the like.

It's early days for the Apple Watch in terms of software so there's no way of coming to a conclusion yet compared to Android Wear. The main thing is whether you want to use a smartwatch with iOS or Android.

Verdict

There's no doubt the Apple Watch and Huawei Watch are both desirable smartwatches. It's early days, but the key differences are the choice between round and square designs and either iOS or Android compatibility.



How to:

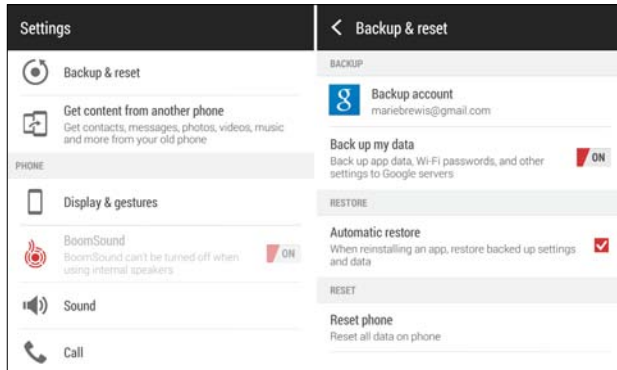
Back up Android for free

Whether something goes wrong or you just get a new device, here's a simple guide to backing up Android

You can be as careful as you like in ensuring your phone or tablet isn't lost or stolen, but one day it could simply refuse to turn on. Then you'll lose everything if it isn't backed up. Here's a simple guide on how to back up your Android phone or tablet, including how to back up photos, video, app data, contacts and more.

While you can purchase third-party apps that promise set-and-forget backup solutions, it's easy enough to back up your Android phone or tablet yourself - and for free. Our screenshots have been

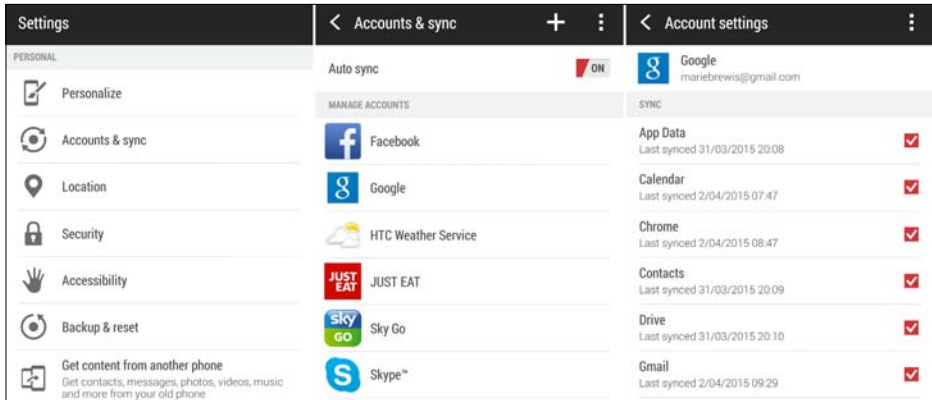
taken on an HTC Desire Eye with HTC's Sense UI, so yours may look a little different but the settings will be the same.



Back up App data, settings and Google data on Android

There are a couple of settings within Android that can safeguard some of your important data. Open your Settings menu, then choose Backup & reset. Ensure the option to 'Back up my data' is enabled. This takes care of your app data, Chrome bookmarks, Wi-Fi passwords and other settings. There's also a setting here to automatically restore any backed up settings and data to a reinstalled app, which will also be useful if you get a new device.

Next head to Settings, Accounts & Sync, then click on Google. Tap on your Gmail account to see a list of what is and is not being synched to Google's servers, and enable any that you want to ensure are backed up. All the services in this list are associated with the Google apps preinstalled on your phone or tablet, such as Contacts and Calendar, Chrome, Play Music, Gmail and Sheets (for Google Drive spreadsheets). By synching the data



within these apps to Google's server you also make them available on any other device to which you are signed into your Google account.

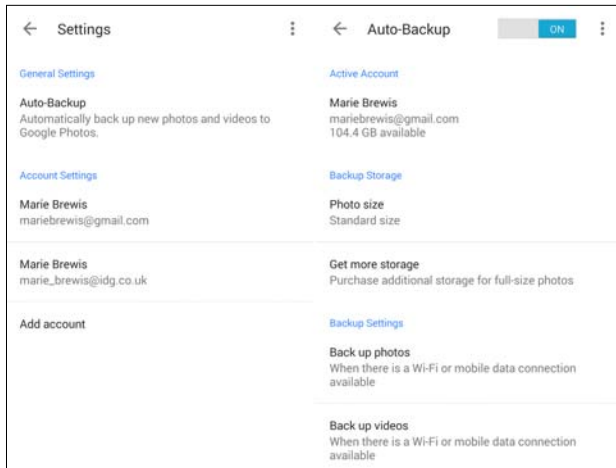
Back up photos and video on Android

The easiest way to back up photos and video stored on your phone or tablet is to automatically back them up to Google Photos, where they will remain private unless you specify otherwise, visible only to you within your Drive, Google+ and Photos apps.

Photos allows you to store an unlimited number of standard-resolution files (2048px), but if you want to upload them at their full size (the default) it will count against your Google Drive storage limit. Google Drive gives you 15GB for free, and thereafter you can buy 100GB for \$1.99/month, or 1TB for \$9.99/month.

You can access the option to Auto-Backup images through the Google Photos app preinstalled on your Android phone or tablet. Launch Photos, tap the three dots in the top right corner, then choose Auto-Backup and slide the toggle on.

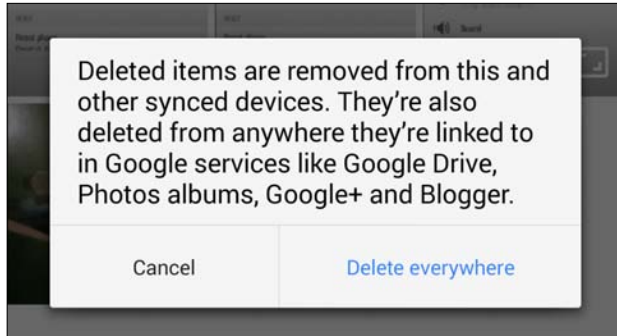
If you don't want to pay for extra storage, tap Photo size and choose Standard size. We'd advise



leaving at their defaults the options to back up photos only over a Wi-Fi connection and not while roaming (video will only ever upload over Wi-Fi). You can also select an option to back up photos only when the device is on charge.

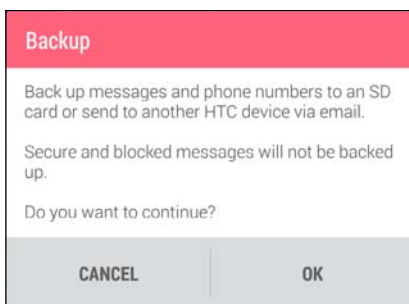
That takes care of the photos and video captured by your device's camera. To also back up screenshots, photos and video downloaded via the web, Bluetooth or apps such as WhatsApp, open Google Photos and tap the three horizontal lines icon at the top left of the screen. Choose On Device, then tap the cloud icon next to each category you want to back up.

This bit's important: if you want to delete a photo or video from your phone to save space, but keep it on Google Photos, open Photos, tap the three horizontal lines icon at the top left and choose On Device. Tap and hold on an item to select it, then tap the trash can icon. If you have Photos rather than On Device selected, you will delete it from everywhere. (If that happens you will be able to



restore it from the Trash folder for up to 60 days, as long as it was backed up properly and you haven't emptied the trash.)

You can also manually back up your photos and video by connecting your phone or tablet to a PC over USB, then accessing it as you would an external hard drive. You'll find photos and video in the DCIM folder, which you can simply drag-and-drop to your PC to copy them. Mac users should use the Android File Transfer tool.



Back up text messages on Android

You may find your phone has preinstalled software to back up your text messages, as is the case with our HTC Desire Eye, so it's a good idea to check. Open your Messaging app, open the

options menu and look for a Backup/Restore option. If you don't have one you can download a third-party app such as SMS Backup +, which also backs up call logs and multimedia messages.



Dodgy Android virus

This administrator is active and allows the app Google Play services to perform the following operations:

- **Erase all data**
- **Change the screen-unlock password**

How to:

Remove a virus from Android

Viruses on Android are rare, but they exist. Here's a simple way to remove a virus from Android

If you believe your Android phone or tablet has a virus then the good news is it's really easy to delete. Here's how to remove a virus from Android.

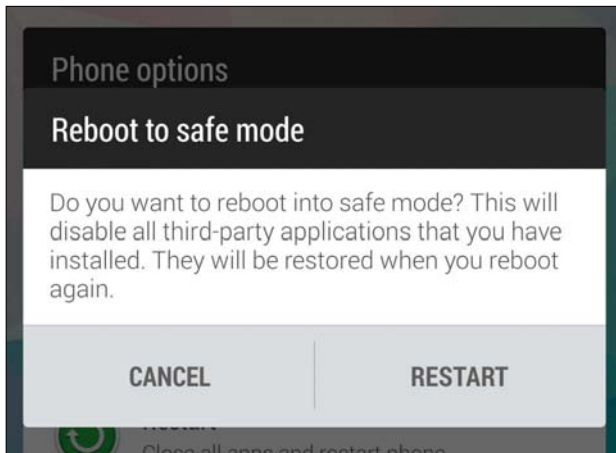
First of all, it's worth pointing out that it's unlikely that your Android phone or tablet has a virus. What you're more likely to be seeing is an ad that wants to convince you Android is infected and you need to download an app, or a dodgy pop-up, or perhaps your device is just misbehaving. But viruses for Android do exist. If you're sure your device has one, here's how to remove it.

All Android viruses are delivered via apps installed on your device, so if your phone or tablet doesn't already have a virus, the best way to avoid it getting one is to never install software outside of the Google Play app store. Open your Settings menu, look for the Security option, then ensure the option for Unknown Sources (allow installation of apps from unknown sources) is disabled.

If you're determined to install an app from outside Google Play, do your research. Check its permissions (does a video player need to see your contacts?), look online for reviews and have a good look at the developer's site to see what else it offers.

You can also install an antivirus app, and plenty of free Android antivirus apps are available that are able to detect and remove malicious apps, for example 360 Mobile Security, Avast and Lookout. These all include an app scanner that will seek out anything dodgy, but note that these apps can also trigger false-positives - reporting an app you've been using for months as malware when you know it's fine. In most cases you can ignore these alerts.

If you believe you already have a virus on your Android phone or tablet - perhaps one that is resisting your attempts to uninstall the associated app or even let you bypass the lock screen - a factory reset will remove it, returning your device to its out-of-the-box state. But doing so also means you'll lose everything on your phone that's not backed up. Instead, follow the below steps to remove a virus from Android.



Step 1. Put your phone or tablet into Safe mode. This prevents any third-party apps running, including any malware. On many devices you can press the power button to access the power off options, then press and hold Power off to bring up an option to restart in Safe mode. If this doesn't work for your device then you should Google 'How to put [your model name] into Safe mode' and follow the instructions. When in Safe mode you'll see 'Safe mode' at the bottom left of the screen.

Step 2. Open your Settings menu and choose Apps, then make sure you're viewing the Downloaded tab. If you don't know the name of the virus you think has infected your Android phone or tablet, go through the list and look for anything dodgy-looking or that you know you haven't installed or shouldn't be running on your device.

Step 3. Tap on the malicious app (clearly it won't be called 'Dodgy Android virus', this is just an

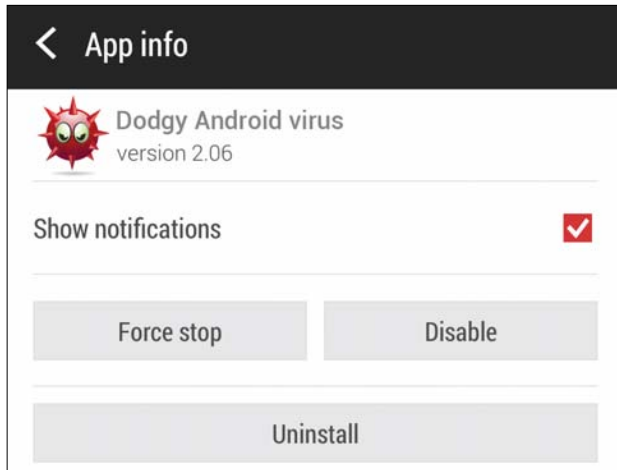
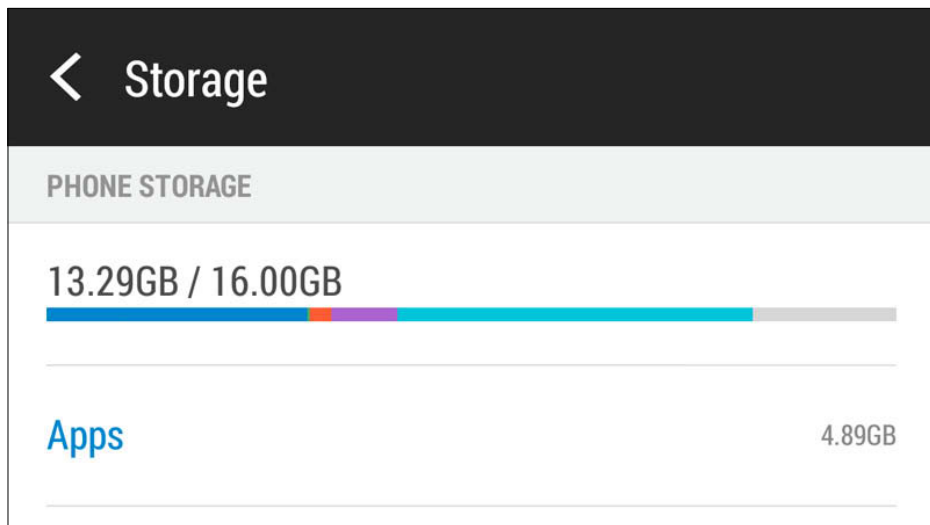


illustration) to open the App info page, then click Uninstall. In most cases, this is all you need to do to remove the virus, but occasionally you might find the Uninstall button is greyed out. This is because the virus has given itself Device administrator status.

Step 4. Exit the Apps menu and tap on Settings, Security, Device Administrators. Here you'll find a list of any apps on your phone or tablet with administrator status. Simply untick the box for the app you want to remove, then tap Deactivate on the next screen. You should now be able to return to the apps menu and remove that app.

Step 5. With the virus now off your Android phone or tablet, all you need to is restart the device to take it out of Safe mode. Now that it's working correctly it's a good time to back up whatever important data you have stored on the device, and install an Android antivirus app to protect you from any future viruses that come your way.



How to:

Get more storage in Android

The S6's lack of a microSD card slot may have some of you worried. Fear not...

If your Android smartphone or tablet is running low on storage for your apps, photos, video, music and other files - perhaps you have received an error message suggesting you have insufficient storage available - there are several ways to get around it. Here's how to get more storage on an Android phone or tablet.

MicroSD card

The easiest way to add storage to your Android phone or tablet is with a microSD card - if it supports one, of course.

When buying a microSD card for your phone or tablet, first check the manufacturer's spec or reviews of that device to see what type of cards it will accept. Many budget phones, for example, will accept only 32GB, while higher-end devices typically handle 128GB. You certainly don't want to pay out for a 128GB card only to find it won't work in your phone.

You'll find manufacturers offer various types of microSD card, with some claiming to be faster or more secure than others. For simple storage of your files any microSD card will do, but note that fakes can be found online, so be wary of anything too cheap or brands you haven't come across before.

USB OTG storage

You might not realise it, but many Android phones and tablets support USB OTG (On The Go), which allows you to plug in peripherals such as storage drives, just as you would with a PC.





Whether or not a device supports OTG won't always be listed in its spec. A quick and easy way to check whether your device supports OTG is to download to it the USB OTG Checker app, free from Google Play.

Once you've established that your device supports OTG you simply need an OTG adaptor such as the Inateck HB3001G. It costs just £12.99 from Amazon, and has an assortment of USB slots and card readers for letting you attach peripherals to your phone or tablet. If you're going to use it simply to insert a microSD card to a phone that doesn't support removable memory then the phone should be able to power the device by itself. However, if you want to add an external hard drive you'll probably need to also power the OTG adaptor (a USB power cable is provided).

Delete unwanted apps & clear app cache

Sometimes you don't really need more storage, you just need to make better use of what you've got. Your phone or tablet probably came with several apps you have no interest in using, and



you've probably since installed even more that you never use.

If you don't use them, uninstall them. If you later decide you need them then just download them again - any apps you've paid for at Google Play will be available to any Android device on which you're logged into your Google account.

Even the apps you want to keep can be taking up more space than they require. Over time every app on your phone fills space with cached files, and clearing these out can free up some room without you resorting to one of the other methods listed here. Clearing your app cache can also help to solve problems with misbehaving apps.

Clearing your app cache won't delete any important files on your phone, but keeping things backed up is never a bad idea.

In clearing your app cache you have two choices. You can go to Settings, Apps and go through each app, clearing the cache as required, or you can wipe the whole lot at once.

We're not referring to a factory reset (although that will solve your storage problems by returning your device to its out-of-box state), but to wiping the app cache. In order to do this you need to enter Android's Recovery mode and choose to wipe the app cache.

It's not exactly the same process for all phones, so it's worth Googling your exact model to see how you enter recovery mode. On my HTC Desire Eye, for example, you need to switch it off, then press and hold volume down, then press and hold the power button to enter recovery mode. You then press and hold volume up and power to access recovery options. An option here offers to wipe the cache partition (make sure you don't choose wipe data/factory reset).

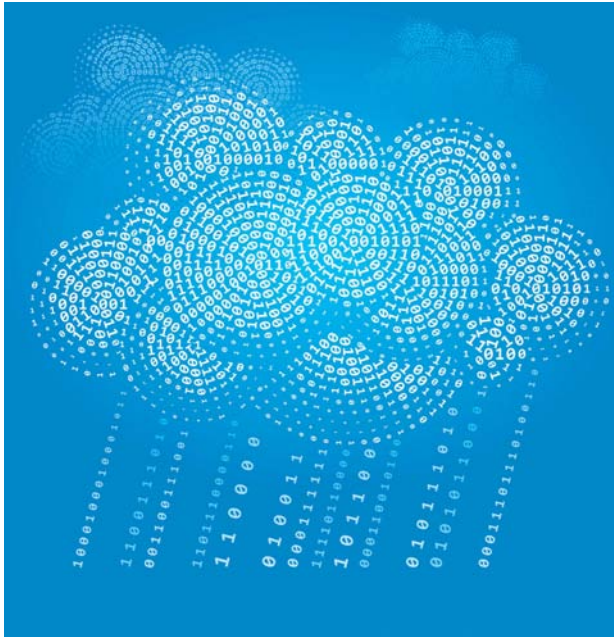
Cloud storage

Another really good option for freeing up space on your Android is to embrace cloud storage on your smartphone or tablet.

Cloud storage apps such as Dropbox can automatically back up all your photos to the storage site, or you can upload only those you want to store online. Once in the cloud you can free up space by deleting them from your phone or tablet.

The only down side to using cloud storage is that you will be able to access those files only when you have an active internet connection.

Google offers several apps that are usually built into your phone or tablet for storing online your music, photos and more. For example, Play Music lets you store all your tunes in the cloud for accessing on any device, and if you need to



hear them offline you can also download them to your phone or tablet. Similarly, Google Drive lets you store online all your word documents and spreadsheets.

Using a service such as Spotify is an alternative to storing tracks on your own device. This music-streaming service offers a free service (with ads) that will let you listen to almost any tune you like.

Wireless hard drive

One final option you have for getting access to more storage on your Android device is by using a wireless hard drive. A wireless hard drive is exactly the same as a normal portable hard drive, but you connect to it via Wi-Fi. Loads of options are available, and they're becoming more affordable, too.

